REALISING THE POTENTIAL OF ART-BASED METHODS IN MANAGERIAL LEARNING: EMBODIED COGNITION AS AN EXPLANATORY VIEW OF KNOWLEDGE

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ABSTRACT

Although art-based methods are increasingly being used in management learning interventions (Taylor & Ladkin, 2009) there is little understanding about the means by which these methods foster particular learning outcomes. This conceptually-based paper addresses this concern through revisiting the philosophy of art and education (Arnheim, 1969; Dewey, 1934; Eisner, 2002; Langer, 1951) in light of recent theoretical developments in neuroscience known as embodied cognition (Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005; Rohrer, 2007; Wilson, 2002). We propose that embodied cognition's recognition of the central role played by 'simulation' (Barsalou 1999, 2008) in learning processes offers unique insights into the mechanisms through which arts-based methods work and how they differ from (other) experiential learning interventions. This exploration leads to two propositions, a) stimulating new activation patterns in the way the brain engages with a phenomenon enables new possibilities for dealing with that phenomenon; and b) making art is a means by which those new activation patterns can be created. The paper concludes by demonstrating the power of this understanding by re-interpreting three scholarly accounts of the use of art-based methods within manager development, and suggesting implications for how such interventions can more fully realise their developmental potential.

Keywords: aesthetic-based learning, arts-based methods, embodied cognition, perceptual symbol system theory, managerial learning interventions, theory of knowledge

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Although art-based methods are increasingly being used in management learning interventions (Taylor & Ladkin, 2009) there is little understanding about the means by which these methods foster particular learning outcomes. This conceptually-based paper addresses this concern through revisiting philosophy of art and education (Arnheim, 1969; Dewey, 1934; Eisner, 2002; Langer, 1951) from the perspective of 'embodied cognition' (Barsalou, 2008; Niedenthal et al., 2005; Rohrer, 2007; Wilson, 2002). We propose that embodied cognition's recognition of the central role played by 'simulation' (Barsalou 1999, 2008) in learning processes offers unique insights into the mechanisms through which art-based methods work, thus suggesting important implications for how art-based interventions might achieve their full potential .

The paper is structured as follows: firstly the literature on art-based methods within management education is reviewed, leading to the identification of an absence of theory concerning the mechanisms by which these methods work. New understanding of learning processes offered by the field of 'embodied cognition' is introduced to address that gap, focusing particularly on how Perceptual Symbol Systems (PSS) theory identifies the link between the creation of concepts and our sensory systems. This understanding is re-considered through reference to those writing from the perspective of the philosophy of art in order to make the connection between PSS and art-based learning interventions. Two propositions are offered through the intersection of perspectives: a) that stimulating new activation patterns in the way the brain engages with a phenomenon enables new possibilities for dealing with that phenomenon;

and b) that making art is a means by which those new activation patterns can be created. The paper concludes by demonstrating the power of this understanding by re-interpreting three scholarly accounts of the use of art-based methods within manager development, and suggesting implications for how such interventions can more fully realise their developmental potential.

FRAMING THE INQUIRY

Art-based methods in management education

Art-based methods in management education covers a broad range of teaching and learning interventions. They are often defined as methods that utilise elements traditionally associated with art, such as, artistic media (e.g. poetic language, dance, painting, music, etc.), artistic processes (such as those used in art education or by individual artists to develop works of art), or works of art created by well-known artists (e.g. plays, poems, paintings, sculptures, or architecture) (Nissley 2010, 2002). Such methods are ostensibly used to achieve a number of different outcomes, ranging from pure entertainment to teambuilding or even to developing organizational strategy (Darsø, 2004). They are also used to develop particular skills or capacities. For example, Beirne & Knight (2007) offer a theatre workshop with management students as a way of facilitating critical reflection as described by Alvesson & Willmott (1992); Bathurst, Sayers, & Monin (2008) use parody (in the form of cartoons) to develop service managers' understanding of key aspects of 'service', Wicks & Rippin (2010) invite managers to create dolls in order to enhance their understanding of themselves as leaders, and Cowan (2007) uses works of art by artists, such as, Monet, Frank Lloyd Wright, Calder, Hopper, and Bernini to teach leaders about abstract concepts, such as, visioning, improvisation, reflection, and inclusion.

This paper focuses on art-based methods used within formal management educational settings to facilitate individual, rather than group, learning processes. Furthermore it limits its scope to those interventions in which participants create objects in media associated with art; such as, poetic language, paint and other craft materials, dance/movement or theatre. Interventions in which participants merely attend, appreciate or discuss such objects made by others (e.g. Cowan, 2007) are not considered. In other words, we focus on two categories within Taylor and Ladkin's (2009) model of art-based methods processes: 'projective technique' in which participants create objects on which to reflect, and 'making' in which engaging with the art creation process itself is the goal of the intervention.

An example may be helpful to clarify the kind of art-based method of central interest here. Bathurst, Sayers and Monin (2008) provide such an example. In it, managers were invited to explore their concept of service by observing service workers going about their jobs and afterwards creating various forms of parody of what they saw. Bathurst et. al. (2008) describe in detail one of the parodies produced by students in their class, namely, a cartoon. The first picture in the cartoon depicts a highly motivated service worker looking forward to providing great service. The next frame shows a situation at the service worker's workplace (a fast food restaurant) where a customer is speaking on his cell phone when he comes to the front of the line. When the service worker tries to take the order of the customer behind the man on the phone, the customer on the phone gets angry and insists that he should be served first, given his position in the line. However, he continues to speak on the phone rather than giving his order. The other people in the queue get tired of waiting and leave. After 15 minutes the troublesome customer ends his call and orders something that is not on the menu. When the service worker tells him what he wants is not available, the customer gets angry and leaves while complaining

about bad service. In the last picture the service worker is very frustrated and demotivated. The cartoon is made in manga style (Japanese cartoon style), with highly evocative, emotional expressions on the faces of the service workers.

Among other points, this cartoon demonstrates the 'dark side' of 'the customer is always right' policy. It shows the absurdity that can result from following such a policy in a strict manner – both in terms of bad service (to the other customers) and through evoking the sense of disempowerment created when the service worker attends to it rigidly. In this way, the cartoon captures the contradictions inherent in a concept such as 'customer service' in a way that a definition on its own cannot. Additionally, it enables those creating the cartoon to own and act on their visceral apprehension of the experience in a way that draws on their emotional and sense-based response to their experience of watching the service workers. How do art-based methods foster this kind of apprehension? The answer to this question is not apparent in current theorizing about the use of art-based methods. Instead, we turn to the burgeoning field of 'embodied cognition' to begin to make sense of the mechanisms involved in the kind of learning art-based methods can foster.

Embodied cognition, concepts and simulations

There are two concepts which are central to the argument being made here. These are the notion of a 'concept' itself, and that of 'simulations'. The following section describes these in relation to 'Perceptual Symbol Systems Theory', a branch of embodied cognition seen to be most relevant to the argument being made here. To begin, we consider what is meant by 'embodied cognition', and relate the notions of concepts and simulations to this theory of learning.

The embodied view of cognition is based in the understanding that cognition is grounded in the body and the body's interaction with the environment rather than in abstract symbols

stored separately from the sensory-motor systems (e.g. Barsalou 1999, 2008; Ziemke & Frank 2007; Lakoff & Nuñez 1999; Clark 1999; Svensson, Lindblom & Ziemke 2007). This understanding is distinct from the 'classical/symbolic view' of cognition, in which knowledge is understood to be obtained, processed and stored using abstract symbols which are located in a separate part of the brain (likened to a computer) (Barsalou, 2008, Johnson & Rohrer 2007, Wilson 2002). It is also different from the 'connectionist' view which posits that cognition emerges from networks of interconnected units within the brain known as neural networks (Hebb 1949, Wheeler 2005). Its primary differentiator from these theories is its recognition of the role played by the body in cognitive processes. In particular, embodied cognition challenges the assumption core to symbolic and connectionist approaches that the sensory/motor system operates through mere input and output mechanisms.

Although this general view has come to be known as 'embodied cognition' it is important to note that it is not a formalised theory of cognition but rather a collection of theories that all reject the symbolic (dis-embodied) view of cognition. There is actually no general agreement on what it means that cognition is 'embodied'. However, Wilson (2002) helpfully categorises six views of embodiment apparent in current literature. The most powerful of these categories she believes to be those concerned with off-line cognition, i.e. cognition concerning elements that are not currently present. It is within this category of embodied views that the role of 'simulations' and their explanatory power arises.

Perceptual Symbol System Theory (PSS) (Barsalou, 1999) is one of the most coherent theories of embodied cognition dealing with of off-line cognition. Central to PSS are the concepts of 'simulators' and 'simulations' (Niedenthal et al. 2005; Barsalou 1999, 2008). Two of the main hypotheses found in PSS are a) that our cognitive processes and our sensory/motor

processes draw on the same neurological system and b) that our different interaction with any given phenomenon, are based on *different* simulations of this phenomenon. Both hypotheses are supported by an increasing number of empirical studies.

According to PSS, the only way a phenomenon, such as a chair, can be conceived is by partially reactivating the neurons in our sensory and motor systems in the way they are typically activated when a chair is seen, sat on, moved about or heard during interactions with it. Such a partial reactivation in the sensory/motor systems is called a simulation. PSS's main claim is that simulations are the symbolic representation of the phenomenon of a chair. There are no abstract representations of chairs separate from these reactivations in the sensory/motor systems. Barsalou writes that, a simulation is the partial 're-enactment of perceptual, motor, and introspective states acquired during experience with the world, body, and mind' (Barsalou, 2008: 618). In this way, contrary to the abstract symbols suggested by the symbolic view, simulations do have an experiential link to the phenomenon they represent. That our cognitive and perceptual processes draw on the same neurological systems, namely, our sensory and motor systems, has been well supported by empirical studies (see Niedenthal et al., 2005; Wilson, 2002 for a review).

However, a simulation of a given phenomenon is not just a reactivation of random parts of the sensory activation related to this phenomenon. Rather simulations are partial reactivations 'designed' to *support specific interactions with a phenomenon* (Damasio 2009). PSS suggests that for any phenomenon there is a collection of different simulations, and that these different simulations support different interactions with the phenomenon. For instance, a simple phenomenon, such as a 'piano' is represented differently (i.e. through different simulations) in different contexts. Pianos can be simulated through the experience of specific body postures and

movements associated with muscle tension resulting from moving a piano. Pianos can also be simulated through experiences of a different set of body postures and movements as well as through certain auditory experiences in the context of tuning a piano (Dantzig et al. 2008: 580).

The collection of all these simulations relating to a piano is what creates our concept of 'piano'. In PSS, this collection of simulations is called a simulator, and it recreates various simulations relevant to the phenomenon 'piano' depending on the context and how the piano is being interacted with. Barsalou and Wiemer-Hastings (2005: 156) write that concepts can be seen as "a large collection of situational representations" supporting "individualized interactions with concept instances".

Finally, PSS claims that abstract concepts, such as truth or freedom, which do not have the same special or temporal constraints as concrete concepts are similarly represented through activations in the sensory and motor centres in the brain (Barsalou 1999, 2008). This claim has been supported by a study where the content of both concrete and abstract concepts was determined and compared (Barsalou & Wiemer-Hastings, 2005). Thus, PSS would hold that, just as in the example with the piano above, different interactions with a phenomenon such as freedom are supported by different activation patterns in our sensory and motor centres.

Here we are proposing that if concepts are based on simulations in our sensory/motor centres and different simulations enable different interactions with any given phenomenon, then it is reasonable to assume, that learning to make new simulations in our sensory/motor centres may enable new ways of interacting with a known phenomenon. In other words, if we learn to represent a phenomenon through a different sensory pattern (a different simulation) then this new sensory pattern has the potential to enable interactions with the phenomenon in ways that were literally unthinkable before. This leads to our first proposition:

Proposition I: Obtaining new simulations of a phenomenon can open new possibilities for interacting with this phenomenon.

In the case of managers, the phenomenon could be a problematic situation that they have been heretofore unable to resolve. For example, if a manager represents *conflict* through reactivating sensations related to danger, he or she will be able to engage with conflict through running away or through attacking (fight or flight behaviour). His or her entire repertoire of ways to engage with conflict would probably be aimed at resolving it. However were he or she able to become aware of the sheer energy inherent within conflict, and from there could learn to represent conflict through the reactivation of sensations being energised, such a reinterpretation has the possibility of enabling new ways of understanding and dealing with conflict. For instance the energy associated with conflict could be channelled into productive, rather than evasive or aggressive behaviour. From such a perspective, generating some degree of conflict might even be seen a potentially energy-raising for a team.

Another example could be a manager who represents 'necessary follow-up tasks' through sensations related to restricted motion. This would make sense, since the necessity of the task places limits on their freedom of movement within their work. Their repertoire of interaction with such tasks might revolve around ways of accomplishing them quickly, or even finding excuses for skipping them all together. Through discovering the sense of support and stability also inherent to such work, the manager has the opportunity to incorporate these representations in his or her 'concept' of 'necessary follow-up tasks'.

The proposition becomes stronger by proposing that there may exist certain ways of interacting with any given phenomenon (whether concrete or abstract) that will generate new simulations. For example, a manager attending a management course may learn that he or she

should promote a certain level of conflict in his organization because this will promote productivity. He may learn that he should assemble diverse teams in order to produce conflict that fuels innovation. However, if he represents the concept of conflict through sensations related to danger, and he has not learned to represent it through reactivation of sensations related to being energised, then he may not be able to implement these learning points. He would be put in a situation, where he was asked to create something that felt dangerous because someone told him that he could get something out of it – and that would create an internal dilemma for him. If he learned to perceive and internally represent conflict as a state of heightened energy, this dilemma would no longer exist. Thus, learning to perceive this sensory aspect of conflict may be a prerequisite for learning to interact with conflict in a certain way, namely, as something that can be promoted to create innovation and productivity. We are suggesting that making art is one way in which perceiving the sensory aspects of a concept and thereby enlarging it can be accomplished. To make this case, we turn to philosophers of art and education.

Art creation as fostering the creation of new simulations

It is interesting that many of the insights from PSS were formulated earlier by art philosophers writing in the tradition of pragmatic aesthetics (e.g. Arnheim, 1969; Dewey, 1934; Eisner, 2002; Langer, 1951). Thus, this literature can be seen as a precursor to embodied cognition and drew its basis from Gestalt psychology and art philosophy – rather than the bulk of empirical evidence populating studies of PSS. A full exploration of this literature is beyond the scope of this paper. However, it can be helpful to highlight a few key ideas to make the link between embodied cognition and art creation.

For instance, Arnheim expressed the key claim of PSS in a very clear and insightful way many years before PSS theory was established when he wrote: “perceptual and pictorial shapes are not only translations of thought products but the very flesh and blood of thinking itself” (Arnheim, 1969: 134). Thus the “perceptual and pictorial shapes” we work with in art, are, in the language of PSS, directly linked to the simulations, i.e. “the flesh and blood of thinking itself”. Similarly, Langer (1951) poses the question, ‘if creation of art is truly a process of creation, what then is created?’ Her answer is that a concept is created. Langer defines a concept as a perceptible pattern that can be embodied in the work of art. She points out that the relationship between artwork and the concept it embodies is that of symbol and symbolized. Thus many objects can be symbols of the same concept, but no object can be the concept itself. Works of art can only point to a concept. At the same time, no concept could exist without any symbols for it.

Take, for example, the concept ‘blue’. Any blue object can be a symbol for the concept blue, in that they through their color points to the concept of this color. But no blue object is equal to the concept. However, if one has never seen any blue objects, one could not have the concept of blue. In the language of PSS, this claim translates into that artworks may trigger specific patterns in the sensory motor centers in the brain, which include the patterns that could eventually make up a new concept. Just like a blue hammer would trigger the patterns in the retina that corresponds to blue plus other patterns plus other patterns corresponding to its shape and function.

Since the numbers of possible patterns in our sensory/motor centers may well be infinite, the act of making a specific selection can be called an act of creating a pattern. The creation of the artwork is the only possible way of communicating this pattern, since no pattern can exist without a symbol that embodies it. If an artist lived in a world in which the concept of blue had

not been invented, he or she might discover and communicate this pattern by creating many blue objects. Similarly, the impressionist painters can be seen as developers of our concepts of light and movement, through creating paintings that point to specific patterns triggered by light and movement.

Looking at the process of art creation from the perspective of PSS, it can be seen that through learning to evoke a particular sensory pattern by means of an artistic medium, the artist learns to be aware of and simulate this particular sensory experience. According to PSS, simulations are the stuff our concepts are made of. Thus, when we become aware of a new aspect of sensory experience, we may not have a word for this experience. However, we can create an artistic object that can evoke this experience in us, and that may serve as the handle on this sensory experience that our language cannot offer us. If what is created in art is a new simulator, it also makes sense, that art needs to use media that evoke sensory experience and that different artistic media, such as, painting, music, dance, etc., will be able to create different kinds of simulators, since the media themselves are able to trigger our sensory and motor systems in different ways. Simply put, it would be impossible to learn to simulate 'blue', only through the use of language, since language is a media that does not in itself trigger any reactions on the retinas in our eyes. Thus, using a visual media is necessary if the patterns we are creating and learning to simulate involves activation in our visual centers.

Finally, Dewey (1934) claims that art creation is an exploration of the perceptual field and it, therefore, allows us to become aware of aspects of sensory experience beyond what is needed for recognition (Dewey, 1934). This is a point Eisner (2002) also highlights. Very simply put, we need to be aware of relatively few aspects of our sensory experience to *recognize*, e.g., a car. If we wish to make a painting of a car we need to become aware of more aspects of our

sensory experience of the car. If we wish our painting to become a work of art, we would need to become aware of patterns in our sensory experience related to the car that few people have previously been aware off and that possibly changes our way of experiencing and/or interacting with cars – or with ourselves as it is the case with a lot of good art. Thus, art-creation can be understood as an aesthetic inquiry where we broaden our awareness to include more aspects of our sensory experience than we usually include when our awareness is focused, e.g., by a purpose, such as, recognition (Dewey, 1934; Eisner, 2002). Summing up the above ideas and expressing them through the language of PSS leads to our second proposition:

Proposition II: Creation of art is creation of new simulations through an exploration of the sensory field and creation of symbols that embody this new simulation.

In the context of the international art scene, 'new' may mean new to society. In the personal development contexts, such as, managerial education, 'new' may mean new to the individual. The relevance of our second proposition to managerial education becomes clear when we remember that according to our first proposition, the new simulations, we may obtain as individuals through engaging with art creation, may enable new, and previously unthinkable, interactions with phenomena – including phenomena relevant to managers.

Difference between experiential learning and art-based methods

To illustrate the significance of the above propositions we will first show that they offer a way to distinguish between art-based learning and other kinds of experiential learning.

In literature on experiential learning, the inclusion of concrete experience in the learning process is often described as a way of upgrading the learners' prototypical understanding of something by exposing them to experience that may contradict the experience automatically produced by

the established prototypes. Thus, experiential learning often builds on the connectionist view of cognition.

By contrast, we are proposing here that the inclusion of art creation in the learning process can be seen as a way of enabling the learner to simulate specific patterns in his or her sensory motor centres, i.e. to simulate very specific selections of the full experience. Furthermore learning to make new simulations is interesting for managers, because they may make new interactions with relevant phenomena available in their day-to-day organizational contexts.

For example from the perspective of experiential learning a fast food restaurant may be visited, with the aim of encouraging learners to pay attention to the interactions between service workers and customers in order to have a 'reality check' and see if their current beliefs about service workers in fast food restaurants are accurate or need to be modified. Using such an intervention from an art-based perspective however, the fast food restaurant would serve as a theatre in which learners could be encouraged to attend to the full range of their senses, and from this embodied knowing to create objects (such as cartoons) that evoke similar sensory experiences.

From the perspective of embodied cognition then, the cartoon exercise not only invites learners to place prolonged attention on the phenomenon of service and therefore increases the possibility of modifying their service prototype (as suggested by the connectionist view), it also enables a process by which new aspects of sensory experience of service can be 'grounded'. This occurs firstly through the creation of an artistic object that can evoke such sensory experiences and secondly in the ability to simulate these sensory experiences without the help of the artistic object. A method that would facilitate this kind of learning process would probably focus on:

1. Interrogating the sensory experience of a phenomenon openly in order to identify new relevant aspects of the experience that may previously have been considered irrelevant;
2. Learning to simulate these aspects of sensory experience;
3. Discovering the new possibilities for experiencing and interacting with the phenomenon that open up once learning to simulate these new aspects of sensory experience has been accomplished.

RE-EXAMINING ART-BASED INTERVENTIONS

In this section the two propositions offered will be investigated by examining examples of documented learning processes from the literature on art-based methods in management education. Three papers have been selected for review, each of which includes first person descriptions and reflections on participants' own experience of using art-creation as a way of facilitating management learning.

Cartoons & service: Bathurst, Sayers, & Monin (2008) use parody (in the form of cartoons) to develop service managers' understanding of key aspects of 'service'.

First, we return to the example of creating the cartoon based on observations in a fast food restaurant. This example offers some support for our second proposition, that art creation can be used for creating new simulations, i.e. including new sensory experience in the way we represent a phenomenon. This exercise can be understood as a way of expanding the collection of simulations, the simulator corresponding to the concept 'service' can create. What is important is not merely the cartoon's ability to re-evoke our experience of the incident at the restaurant, but its ability to evoke a very specific part of this experience. The finished cartoon does not provide a full experience of going to a fast food restaurant, or even of the specific incidence through which a mental model of service can be modified. Instead, it re-evokes a very

particular pattern within this experience which includes frustration, disempowerment, demotivation, and abuse in relation to service. In other words, it can help learners to develop a specific simulation of service work, i.e. learn to reactivate sensations related to disempowerment and use these to represent service work. To be able to do this may provide the students with a new way of interacting with the phenomenon of 'service work'. It will, for example, make sense to them to not insist on a 'customer-is-always-right' approach to service management. If they were unable to represent 'service work' through a simulation of what disempowerment feels like to them, the risk of disempowering service workers by insisting that the customer is always right, may very literally never cross their mind.

Dolls & leadership: Wicks & Rippin (2010) invite managers to create dolls in order to enhance their understanding of themselves as leaders.

Wicks and Rippin (2010) describe a session in which their MSc students "create leadership touchstones, or dolls, as a way of learning about leadership and themselves as leaders" (Wicks & Rippin 2010: 259). In this paper they provide descriptions of a few individual learning processes with quotes from students talking about their creations. Below we will look at two of these. The first offers an illustration of our second proposition, similar to the cartoon example above. The second example offers an illustration of our first proposition, i.e., of how ways of engaging with a phenomenon may automatically change once a new simulation of the phenomenon is introduced.

In the first, a woman referred to as Mari, would have liked leadership to be "bling", but she experiences it as containing loneliness and exposure. The sensations she uses to represent leadership are the sensation of 'nothing covering (my) body' and 'all eyes being on me' (Wicks and Rippen 2010: 262). The first (nothing covering her body) refers to an actual physical

sensation, the second (all eyes being on her) is a phrase that does not reveal the underlying sensations directly, but it is also a phrase that usually refers to a certain physical sense that could be described as one's skin being slightly too small to be in. It seems clear that the doll created these sensations in a precise manner and that the process of creation is also reactivated these sensations clearly. However, it is not clear from the description in the article, whether this opens new ways of engaging with leadership for Marie. Thus, if our second proposition is true, it would be interesting to investigate whether after creating the doll Marie started becoming aware of or spontaneously effectuating new ways of taking up the leader role.

Wicks and Rippin (2010) also describe a man referred to as James. James created a doll wearing a nice suit, which is one way he claims to have represented leadership and conformity in his younger days. Tied to the leg of the doll is a big ball of black and coloured paper strips, that James calls 'his baggage' or as "all the chains and weights that you carry around you in life" (270). It seems that the physical sensation of carrying around some sort of dead weight that restricts motion is not new to James, not something he discovers in the process of creating the doll. However, he tells a story of a younger self and an older self – before and after he started using the reactivation of the sensation of *carrying weight around*, as part of the way he represented to concept of *leadership*.

In this story he also describes distinctly different ways of engaging with leadership. Whereas, the younger self saw management as something "neat and tidy" and uncomplicated, the older self sees it as something where on one hand "there's all this baggage behind which is really a bit of a problem for everybody" and which does not allow him to "say and do as you will" (270) and on the other hand also is what enables him to "go out in my suit and do the things that I do" (270). Thus, it seems that introducing the sensation of "chains and weights that you carry

around" (270) into the collection of simulations that James uses to represent management in his thought changes the way in which he both perceives and engages with management.

Stars & turtles: Taylor & Ladkin (2009) Understanding art-based methods in management education.

This paper presents a [first-person account of an exercise similar to Wicks and Rippin's. The exercise took place at the Banff Centre and instead of dolls, masks were created to capture "the essence of the individual's sense of her own leadership" (Taylor & Ladkin 2010: 61). This example is particularly interesting, because it may indicate how new simulations may offer a way to transcend contradictions in established conceptual categories.

In the example, two elements of the mask are described in detail, namely, five turtle shapes stacked on top of each other on the inside of the mask and five stars placed as a crown on the outside of the mask. The turtles are described as evoking a sensation of the kind of ground that leaders stand on. One turtle is standing on the next and "it's turtles all the way down" (Taylor & Ladkin 2010: 63). Each turtle is a physical representation of a question. Each question leaders are 'standing on' rests on another question, and there is no perceivable end to the stack. The stars are, by contrast, described as having a "strong royal feel" (Taylor & Ladkin 2010: 63). As in previous examples, the actual physical sensations that are called 'a royal feel' are not disclosed in the description, but the word *feel* indicates that the description does refers to a sensation. The creator of the mask notices that: "There is a tension between the king role and the questions of the turtles—which one is my sense of my own leadership? Both are and both exist within the mask—not in conflict, but together supporting the whole." (Taylor & Ladkin 2010: 63). It is interesting to notice, that these two sensations may be used to represent two concepts that can be in conflict, or even be mutually exclusive, since the king role may be connected with

stability that is not usually compatable with a notion of questions upon questions. However, it is still possible that a third concept (the creator's sense of his own leadership) can be based on a simultaneous reactivation of these two sensations. This points to the very interesting notion that whereas concepts logically can be mutually exclusive, the activation patterns in which they are grounded are not. Thus, creating composite simulations may offer an approach to transcending paradoxes in conceptual systems.

IMPLICTIONS FOR USING ART-BASED METHODS

The two propositions offered have a number of implications for how art-based methods in management education can more fully realise their developmental potential. Among the most important ones are, first, that the art-creation process should at least include a substantial exploration of the perceptual field, and, second, that the new behaviours that may follow should be a consequence of learning to simulate new sensory aspects – not a consequence of 'practicing' such new behaviour. Thus, finding the new ways of engaging with the phenomenon would more be an act of discovering how one's behaviour naturally changes after the process, rather than an act of finding new beneficial behaviours through reflection and then practicing these.

The argument suggests that engaging in art-creation has the potential to be a process of developing new simulators. To realise this potential, facilitators should encourage participants to use the art-creation process to explore the perceptual field and, thus, discover new sensations related to the phenomenon one being explored. Simply encouraging managers to create metaphors for or representations of what they understand 'service' or 'leadership' to be, may or may not lead to such exploration of the perceptual field. To increase the probability of participants discovering new sensory aspects through which they may represent a phenomenon, the facilitator may continuously encourage participants to move their awareness to the sensory

aspects of their experience. For instance, in the examples above, the facilitator could have encouraged the participants to explore further the sensory field that seemed to draw their attention. Themes, such as, 'all eyes being on you', or 'it's questions all the way down', or 'a strong royal feel' could have been explored further through developing their expressions through the artistic media.

Additionally, if learning to activate new patterns in sensory-motor centres creates new behavioural possibilities, then what follows the art-creation process would be a process of discovering those behaviours – rather than a process drawing conclusions through reflecting on the art objects, finding new behaviours that seems beneficial, and practicing these behaviours. The new behaviours would not be of a kind that needed to be practiced, they would more be something that learners would do automatically, simply because they now have the option to represent a task through a new pattern of activation – a new simulator. For instance, for James simply noticing the sensation of something heavy attached to his leg changed the way in which he engaged with leadership. This different way of engaging with leadership does not seem to be something that he at any time practiced, it more seemed like a consequence of including this sensation in the way he represented leadership to himself.

CONCLUSION

In the above we have first looked at modern neuroscience, particularly Perceptual Symbol System Theory, and formulated the proposition that *obtaining new simulations of a phenomenon can open new possibilities for interacting with this phenomenon.* We then reinterpreted the thinking of select philosophers of art and education in the light of PSS. This gave us our second proposition, namely, that *creation of art is creation of new simulations through an exploration of the sensory field and creation of symbols that embody this new*

simulation. In order to illustrate and further develop these propositions, we reinterpreted some of the literature dealing with empirical data in the field of art-based methods in management education. It is our hope, that future research will test these propositions in empirical studies.

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APPENDIX

Table 1: Key concepts in the symbolic, connectionist, and embodied view of cognition

Concept	Definition
Symbolic view of knowledge	View of knowledge based on a computer metaphor of cognition. Sees perception and motor systems as input/output and not as relevant to the symbolic processes of cognition
Symbolic processes	Processes like category inference
A-modal symbols	Symbols that have arbitrary links to the experiences they represent – similar to most words.
Connectionist view of knowledge	View of knowledge based on a biological (neural network) metaphor of cognition.
Neural network	A network of units where an activation pattern can represent outer world phenomena.
Prototype	Pattern of associations. Full pattern can be activated by partial stimulation through sense perception. Can be difficult for individuals to distinguish between what is sensed directly and what is filled in by the activation of prototypes.
Embodied view of knowledge	View of knowledge that assumes that outer world phenomena are represented as patterns in the perception and motor systems – not in a separate part of the brain. Thus, these systems are both input/output and the place where symbolic processes of cognition take place.

Simulation	Reactivation of aspects of past sensed experience in the perception/motor systems that represents this experience in cognitive processes.
Simulator	A simulator is the neurons that are responsible for creating various simulations. Our concepts are represented by simulators, i.e. by a collection of simulations.
On-line cognition	Cognition concerning elements that are currently present in our experience
Off-line cognition	Cognition concerning elements that are not currently present.